

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 11025 (1984): Symbols and other markings on hearing aids and related equipment [LITD 7: Audio, Video and Multimedia Systems and Equipment]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE



Acoustics Sectional Committee, LTDC 5 [Ref : Doc : LTDC 5 (880)]

Indian Standard



SYMBOLS AND OTHER MARKINGS ON
HEARING AIDS AND RELATED EQUIPMENT
(IEC Title : Hearing Aids : Part 11 Symbols and Other Markings
on Hearing Aids and Related Equipment)

National Foreword

This Indian Standard, which is identical with IEC Pub 118-11 (1983) 'Hearing aids : Part 11 Symbols and other markings on hearing aids and related equipment', issued by the International Electrotechnical Commission (IEC), was adopted by the Indian Standards Institution on the recommendation of Acoustics Sectional Committee and approved by the Electronics and Telecommunication Division Council.

Cross Reference

In this Standard, the following International Standards are referred to :

International Standard	Corresponding Indian Standard
IEC Pub 63 Preferred number series for resistors and capacitors	IS : 824-1967 Preferred values for resistors and capacitors (revised) (Technically equivalent)
IEC Pub 126 IEC Reference coupler for the measurement of hearing aids using earphones coupled to the ear by means of ear inserts	IS : 10781-1984 Reference coupler for the measurement of hearing aids using earphones coupled to the ear by means of ear inserts (Identical)
IEC Pub 268-1 Sound system equipment: Part 1 General	IS : 9302 (Part 1)-1979 Characteristics and methods of measurements for sound system equipment: Part 1 General (Technically equivalent)

The technical committee responsible for the preparation of this standard has reviewed the provision of the following IEC Standards and has decided that they are acceptable for use in conjunction with this standard:

- IEC Pub 268-7 (Part 7) Headphones and headsets (*under preparation*)
- IEC Pub 417 Graphical symbols for use on equipment. Index, survey and compilation of the single sheets

Adopted 29 August 1984	© March 1985, ISI	Gr 6
------------------------	-------------------	------

1. Scope

This standard is applicable to symbols and other markings on hearing aids and related equipment for the purpose of identifying control settings and giving information regarding technical functions and characteristics.

Related equipment shall be understood to include devices such as:

- hearing aid equipment, not entirely worn on the listener;
- auditory trainers;
- group hearing aid equipment;
- insert earphones;
- other accessories.

2. Object

The object of this standard is to provide symbols and markings for the benefit of users and those involved in the fitting of hearing aids and related equipment.

This standard defines markings for gain controls, output controls, tone controls, switches, selectors, pre-set controls, characteristics of earphones and polarity of batteries.

In certain cases some functions may be combined in one switch, for example the battery switch may be combined with the tone selector, with the input selector or with the gain control.

3. General

Reference is made to the following IEC publications:

Publication 63: Preferred Number Series for Resistors and Capacitors.

Publication 126: IEC Reference Coupler for the Measurement of Hearing Aids Using Earphones Coupled to the Ear by Means of Ear Inserts.

Publication 268-1: Sound System Equipment, Part 1: General.

Publication 268-7: Part 7: Headphones and Headsets (in preparation).

Publication 417: Graphical Symbols for Use on Equipment. Index, Survey and Compilation of the Single Sheets.

Markings should be in easily legible letters, symbols and figures in accordance with the above IEC publications. User controls should be legible without the use of magnification by a person with normal vision. It is preferable that pre-set controls, which are mainly used by hearing aid fitters, be marked in adequate detail, even if magnification is needed.

The use of colour coding, such as differently coloured dots, is not generally recommended because many persons have deficient colour vision. If colour identification is used in any form, it shall be with very careful attention to potential vision problems.

For various reasons, such as lack of space, it may not be possible to accommodate all the proposed markings. In some cases alternatives are given.




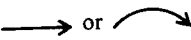
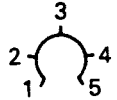

This standard relates to the most basic markings; no attempt is made to cover all conceivable functions.

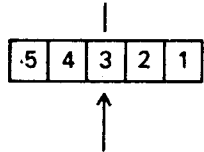





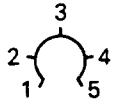
This standard is not intended to prevent the use of function descriptions in words on equipment, where this is appropriate, or the use of graduated scales or other quantitative indicators.

No recommendations are given for particular sequences of operation for any of the switches.

4. Marking of control settings

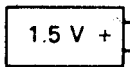




In order to facilitate the identification and the reproduction of the various control settings, the markings shall be indicated as listed below:

	Control		Function	Marking or symbol	Remarks
4.1	Various controls (adjustable in steps as well as continuously)	1	Indicating less/more		Increasing height of triangle or eyebrow-like strip indicates "more"
		2			For controls adjusting the output level "more" shall indicate a higher output SPL
		3			As above, with reference points
		4			Direction of arrow indicates "more"
		5			A higher number indicates "more" A lower number indicates "less"
		6		1, 2, 3, etc.	
4.2	Battery switch	1	Off	O	
4.3	Input selector	1	Microphone	M	
		2	Induction pick-up coil	T	
		3	Combination of micro- phone and induction pick-up coil	MT	
		4	Infra-red reception	IR	
		5	Radio reception	R	
		6	External electrical input	E or 	

	Control		Function	Marking or symbol	Remarks
4.4	Tone selector	1	Normal or no emphasis	N	<p>In cases where several forms of high-frequency or low-frequency emphasis are employed, the letters stated opposite shall be followed by numbers, e.g. H1, H2, etc., L1, L2, etc.</p> <p>The number used shall be such that increasing numbers indicate increased emphasis on the frequency range in question</p> <p>H and L can also be combined with symbols in accordance with Sub-clause 4.1 for higher or lower emphasis</p>
		2	High frequency emphasis or low-frequency suppression	H	
		3	Low-frequency emphasis or high-frequency suppression	L	
4.5	Gain control	1	Gain setting		Figures on control knob and line or arrow on case or frame; a higher figure indicates a higher gain
		2		or:  or:  or: 	On case or frame Gain increases with increasing height of eyebrow-like strip or triangle
		3		 or 	Gain increases in direction of arrow
		4			A higher number indicates a higher gain
		5		Combination of above	

	Control		Function	Marking or symbol	Remarks
4.6	Automatic gain control operations				If variable A, AI or AO is marked with numbers or symbols a higher number and "more" indicate higher output SPL
4.6.1	Automatic gain control selector	1	Automatic gain control in general, not further specified	A	
		2	Input controlled AGC	AI	
		3	Output controlled AGC	AO	
4.6.2	Compression ratio	1	Adjustment of compression ratio of AGC	CR	Combined with figures or less/more symbol in accordance with Sub-clause 4.1 for more than one degree of compression ratio and/or more than one recovery time
4.6.3	Recovery time	1	Adjustment of recovery time of AGC	RT	
4.7	Output control	1	Maximum output adjustment	P	Combined with figures or less/more symbol in accordance with Sub-clause 4.1 for indication of more than one output level or more than one gain level
4.8	Pre-set gain control	1	Maximum gain adjustment	G	

5. Miscellaneous markings and indications

	Description		Markings
5.1	Battery polarity and voltage indication on the hearing aid		<p><i>Body-worn aids</i></p>  <p>or</p>  <p><i>Head-worn aids</i></p> <p>+</p> <p>or + 1.3 V</p> <p>Good contrast is recommended so that + sign shows up clearly</p>
5.2	Impedance of external transducers to be marked on equipment, when required		Minimum value or range of values in ohms, near socket using the E6 series or the E12 series of IEC Publication 63
5.3	Microphone	Non-directional	M
		Directional	DM
5.4	Binaural balance		
5.5	Indication on the outside of the housing of the apparatus for placing and orientation of induction pick-up coil		 <p>T</p>
5.6	Socket for external electrical input		 or E
5.7	Brand name, manufacturer's identification number, serial number		Should be present

6. Markings on hearing aid insert earphones

Markings of impedance and frequency response category on insert earphones shall be in the form described in the following sub-clauses. The marking of a manufacturer's identification number, which will uniquely identify the earphone type, is strongly recommended so that more detailed information can be found in the manufacturer's data sheets. Such information might include frequency response and sensitivity; impedance as a function of frequency; power handling capacity and distortion levels; polarization current range when appropriate.

6.1 Impedance

6.1.1 Definition of impedance

The term impedance as applied to a hearing aid earphone shall mean the modulus of the complex earphone impedance measured at 1 000 Hz with the earphone coupled to the 2 cm³ coupler specified in IEC Publication 126. An alternating input current corresponding to approximately 1 mVA input at 1 000 Hz, which for polarized earphones shall be superimposed with the appropriate polarization direct-current, shall be used to measure the impedance.

If the curve showing the variation of the earphone impedance modulus with frequency has resonances or antiresonances in the frequency range around 1 000 Hz, a smoothed curve levelling out the resonances and antiresonances should be substituted.

The 1 000 Hz impedance value of the smoothed curve can be used as the 1 000 Hz impedance value for the earphone.

The nominal impedance of an earphone of a given model refers to the typical or average impedance value at 1 000 Hz, assigned by the manufacturer as being representative of the model in question.

6.1.2 Marking of impedance

Impedance shall be marked to the nearest value in the E6 series given in IEC Publication 63.

Examples:

Nearest impedance value (Ω)	Marking
10	10
15	15
22	22
33	33
47	47
68	68
100	100
150	150
220	220
330	330
470	470
680	680
1 000	1k
1 500	1k5
2 200	2k2
3 300	3k3
etc.	etc.

Note. — It is recommended that a corresponding impedance marking is placed near the earphone socket of the hearing aid (see Sub-clause 5.2).

6.2 Frequency response curve

6.2.1 Definition of frequency response curve

The term "frequency response curve", as applied to a hearing aid earphone, shall mean the variation over the useful frequency range of the sound pressure level produced by the earphone in the IEC Publication 126 coupler when supplied with a constant current of the magnitude required to deliver an apparent power of 1 mVA into the nominal impedance value defined in Sub-clause 6.1.1.

A direct polarizing current of suitable value and polarity shall be superimposed when appropriate.

6.2.2 Categories and markings

The frequency response curves will be subdivided into three different categories with markings, namely:

N = general purpose characteristic, no large peaks over the frequency range transmitted, upper cutoff at 3 kHz or 4 kHz (example given in Figure 2, page 25).

P = highest possible sound output over the transmitted frequency range, relatively large peaks permissible to achieve high output, upper cutoff at 2 kHz or 3 kHz (example given in Figure 3, page 25).

W = wide range frequency response preferably without large peaks, upper cutoff greater than 4.5 kHz (example given in Figure 4, page 25).

Note. — For "other" categories no specific marking is recommended and the letter marking can be omitted. The impedance marking, however, should be retained.

6.3 Size and position of markings

The print size should be 0.75 mm to 1.2 mm with a print thickness of approximately 0.1 mm.

The markings should be printed on the cover around the outlet nipple as shown in Figure 1, page 23.

7. Markings on bone conduction vibrators for hearing aids

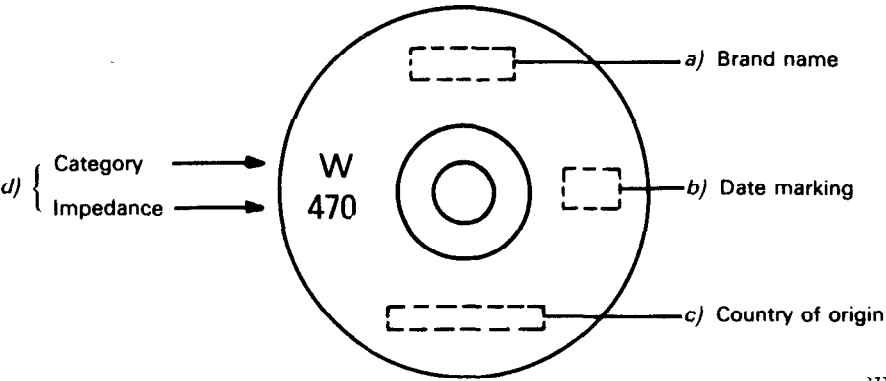
7.1 Markings

7.1.1 Impedance

The impedance marking system, described in Sub-clause 6.1.2, shall also apply to bone conduction vibrators.

Markings on hearing aid insert earphones

- a) Marking of manufacturer's identification number or brand name (optional).
- b) Date marking (optional).
- c) Marking of country of origin (optional).
- d) Marking of impedance and frequency response category (mandatory).



272/83

FIG. 1. — Example of markings around the outlet nipple of an insert earphone.

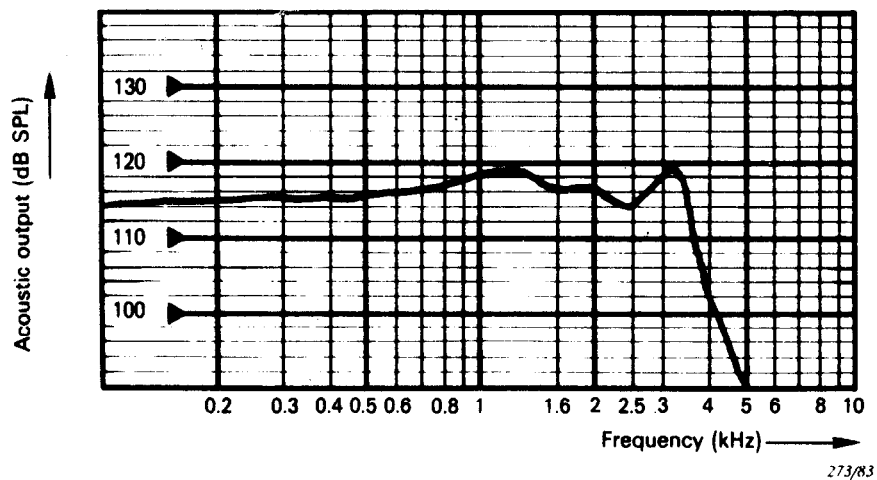


FIG. 2. — Example of frequency response curve of a N-type earphone.

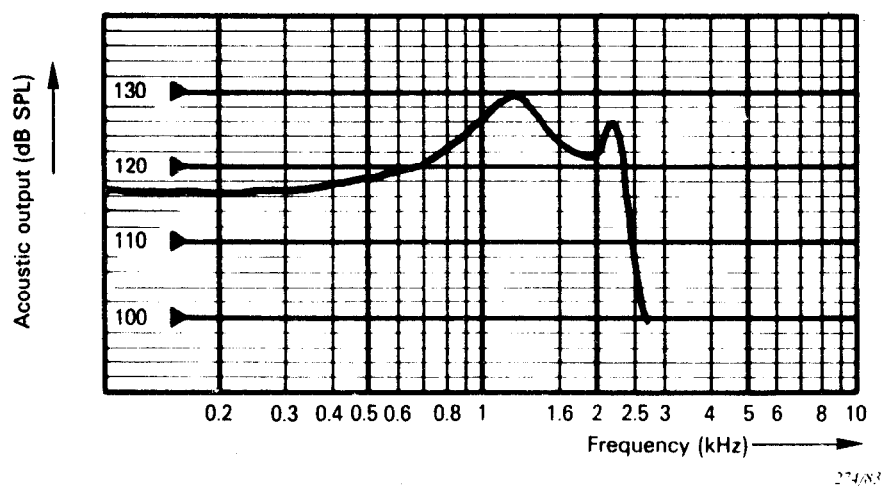


FIG. 3. — Example of frequency response curve of a P-type earphone.

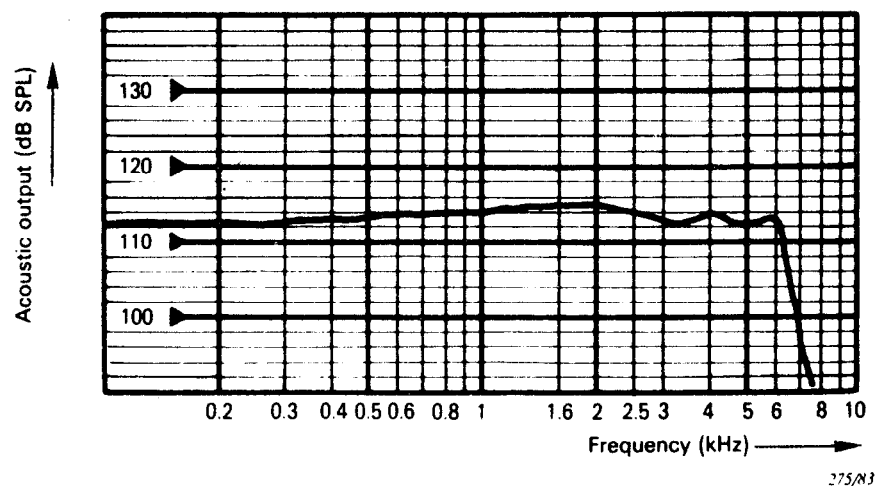


FIG. 4. — Example of frequency response curve of a W-type earphone.

Note. — All curves measured under constant current conditions on an acoustic coupler according to IEC Publication 126.